M B Control & Systems Pvt. Ltd.

Innovative Electronics For You

Providing Electrical & Industrial Automation Solutions since 1983

AUTOMATIC WEATHER STATIONS (AWS) AND WEATHER SENSORS

TURNING INFORMATION INTO PROFITS

www.mbcontrol.com

Precise weather monitoring systems are an essential and mandatory requirement for assessment and operation as it has direct or indirect effect in applications such as Solar & Wind Plants, Electrical Substations, Wind Resource Assessment, Marine, Airports, Agriculture, Construction etc. Timely and effective management of meteorological information, from observations to delivery of forecasts are a challenge for most organizations whose accomplishments are influenced by weather phenomena. MBCS make **"SURYA"** weather stations have been designed to meet the requirements of such applications. SURYA AWS is chosen for any application by customers who are looking for a reliable and cost-effective compact weather station.

In the range of SURYA weather stations, we offer high precision in-house manufactured weather sensors under **"MBMet"** series. These sensors are manufactured with best-in-class components offering long-term stability and reliability.

WHY MBCS INSTRUMENTS

Founded in 1983, M. B. Control & Systems continues to be a leading manufacturer and solution provider in the Electrical Automation and Instrumentation sector. SURYA AWS and MBMET weather sensor series were launched in 2017 to offer high quality and reliable solutions for Meteorological applications. Our products are meant to withstand the harshest environment and are trusted by professionals and weather enthusiasts around the world for their applications.

DURABILITY

Our weather stations and sensors are rigorously tested in-house before shipping. They have been engineered to withstand high wind speeds, scorching sun and extreme temperature variations. All installations done at site by MBCS engineers are as per latest standards.

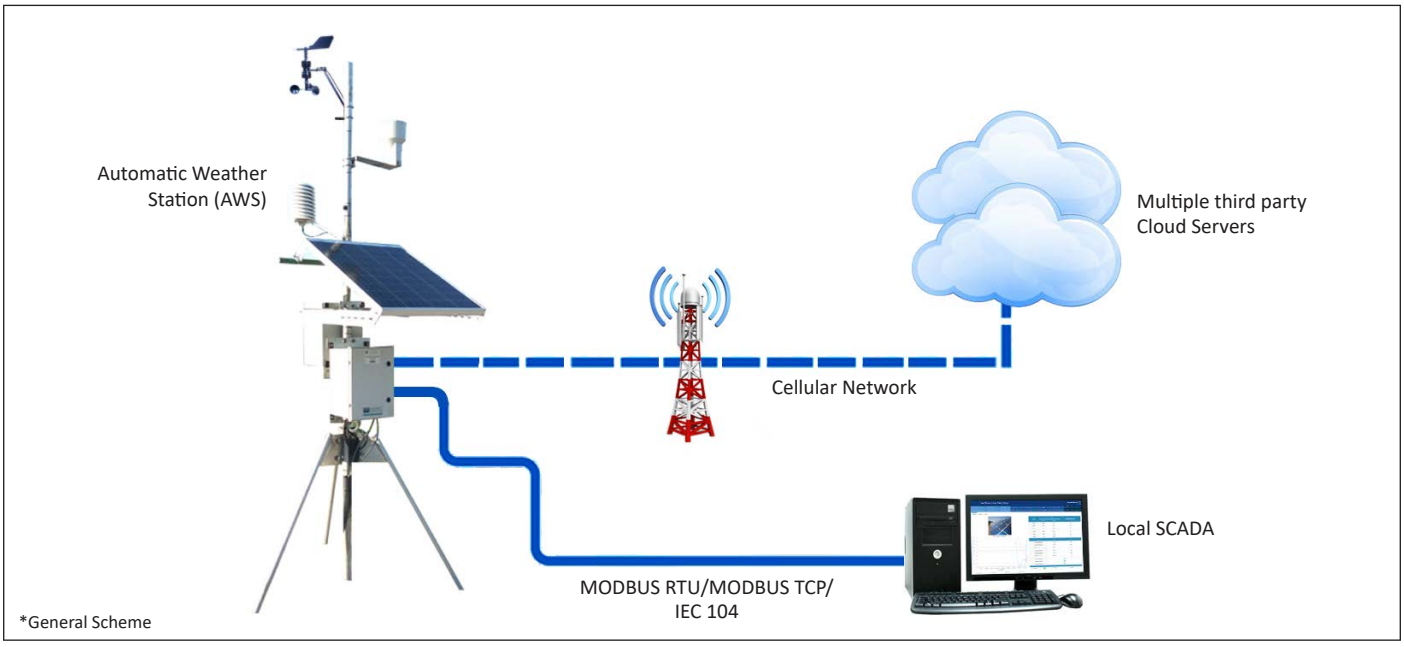
VALUE

Our products are designed to provide high grade instruments at an affordable price. While comparing our product price and quality with other makes, we are always the chosen brand.

PRECISION & ACCURACY

Every sensor manufactured by us has been designed to provide high precision and accuracy. Our experienced R&D team puts in their best efforts refining and upgrading the sensors to ensure minimal sensor routine maintenance. The sensors are calibrated and tested using high precision calibrators and measuring instruments.

BLOCK DIAGRAM OF AWS



SENSORS

AIR TEMPERATURE, RELATIVE HUMIDITY, BAROMETRIC PRESSURE, DEW POINT AND AIR DENSITY SENSOR

MBMet 901 Series

- Temperature Accuracy : ±0.2°C
- Temperature Measuring Range : -40°C to +125°C
- Relative Humidity Accuracy : ±2% RH
- Relative Humidity Measuring Range : 0 - 100% RH
- Barometric Pressure Accuracy : ±0.4 hPa
- Barometric Pressure Measuring Range : 300 to 1250 hPa
- IP Protection rating : IP65 (With 10 plates Radiation Shield)
- Power Supply : 12 to 24VDC with self-loop powered (for Analog Output Sensor) and reverse polarity protection
- Output signal options : Analog 4-20mA & Digital RS-485 Modbus
- Sensor Types :
  a) Air Temperature Sensor
  b) Air Temperature and Relative Humidity Senor with Dew Point Measurement
  c) Air Temperature, Relative Humidity and Barometric Pressure Sensor with Dew Point Measurement
  d) Barometric Pressure Sensor
  e) Air Density Measurement

Make : **MBCS**
Model : **MBMet 901 Series with Radiation Shield**

WIND SPEED SENSOR

MBMet 100 Series

- Sensor Type : Rotating Cup Anemometer
- Wind Speed Range : 0 - 30 m/s or 0 - 60 m/s
- Wind Speed Accuracy : ±2% FS (RS-485 Modbus Output), ±3% FS (4-20mA, 0 - 5V &d 0 - 10V Output)
- Starting Wind Speed :<0.8m/s
- Operating temperature : -30°C to +70°C
- IP Protection rating : IP65
- Supply Voltage : 12 to 24VDC
- Output signal options : Analog 4-20mA, Digital RS-485 Modbus, Analog 0 - 5V and Analog 0 - 10V

Make : **MBCS**
Model : **MBMet 100 Series**

P2546D-OPR

- Sensor Type : Rotating Cup Anemometer
- Wind Speed Range : 0 - 75 m/s
- Wind Speed Accuracy - Calibration uncertainty : 0.28 % @ 4 - 16 m/s
- Wind Speed Resolution : 0.001 m/s @ 10-minute average mode
- Starting Wind Speed : <0.3 m/s
- Distance constant (63% recovery) : 1.81 ± 0.04 m
- Calibration : MEASNET calibrated compliant with IEC 61400-12-1
- Operating temperature : -40°C to +60°C
- IP Protection rating : IP65
- Output signal : Frequency proportional to wind speed

Make : **WindSensor**
Model : **P2546D-OPR**

Make : **MBCS**
Model : **MBMet 110 Series**

WIND DIRECTION SENSOR

MBMet 110 Series

- Sensor Type : Wind Vane
- Wind Direction Range : 0 to 360°
- Wind Direction Accuracy : ±3°
- Resolution : 1° or 22.5°
- Starting Wind Speed : <0.5m/s
- Operating Temperature : -30°C to +70°C
- IP Protection Rating : IP65
- Supply Voltage : 12 to 24VDC
- Output signal options : Analog 4-20mA, Digital RS-485 Modbus, Analog 0 - 5V and Analog 0 - 10V

Make : **MBCS**
Model : **MBMet 130 Series**

WIND SPEED AND DIRECTION SENSOR

MBMet 130 Series

- Sensor Type : Rotating Cup Anemometer with Wind Vane
- Wind Speed Range : 0 - 45 m/s (For Analog 4-20mA) and 0 - 70 m/s (For Digital RS-485 Modbus)
- Wind Speed Accuracy : ±3%
- Wind Direction Range : 0 to 360°
- Wind Direction Accuracy : <±3°
- Starting Threshold : 0.5m/s
- Operating temperature : -40°C to +70°C
- IP Protection rating : IP65
- Supply Voltage : 12 to 24VDC
- Output signal options : Analog 4-20mA & Digital RS-485 Modbus

Make : **Barani Design**
Model : **MeteoWind**

MeteoWind

- Sensor Type : Rotating Cup Anemometer with Wind Vane
- Wind Speed Range : 0-80 m/s
- Wind Speed Accuracy : <1% of measured value (0.3-50 m/s) with MEASNET Calibration.
- Wind Direction Range : 0 to 360°
- Wind Direction Accuracy : 2°
- Starting Wind Speed : <0.3 m/s
- Operating temperature : -40°C to +80°C
- IP Protection rating : IP65
- Supply Voltage : 5 to 24VDC
- Output signal : Digital RS-485 Modbus

Make : **MBCS**
Model : **MBMet 140 Series**

MBMet 140 Series

- Sensor Type : Ultrasonic
- Wind Speed Range : 0 - 60 m/s
- Wind Speed Accuracy : ±2%FS
- Wind Direction Range : 0 to 360°
- Wind Direction Accuracy : ±3°
- Operating temperature : -30°C to +70°C
- IP Protection rating : IP66
- Supply Voltage : 12 to 24VDC
- Output signal options : Analog 4-20mA, Digital RS-485 Modbus and RS-232 Modbus

MBMet 140H Series

- Sensor Type : Ultrasonic
- Wind Speed Range : 0 - 60 m/s
- Wind Speed Accuracy : ±0.2 m/s or 2% of reading, whichever is greater
- Wind Speed Resolution : 0.1 m/s
- Wind Direction Range : 0 to 359.9°
- Wind Direction Accuracy : ±3°
- Wind Direction Resolution : 0.1°
- Operating temperature : -40°C to +70°C
- IP Protection rating : IP66
- Supply Voltage : 12 to 30VDC
- Output signal options : Analog 4-20mA and Digital RS-485 Modbus

Make : **MBCS**
Model : **MBMet 140H Series**

PV MODULE TEMPERATURE SENSOR

MBMet 801 Series

- Measuring Range : -40° to +110°C
- Sensor Element Type : RTD
- Temperature Accuracy : Class A
- Temperature Stability : <0.1°C per year
- Sensor Housing : Self-Adhesive Aluminium
- Output signal options : RTD PT100/PT1000

Make : **MBCS**
Model : **MBMet 801 Series**

MBMet 802 and 803 Series

- Measurement Range : -40° to +110°C
- Temperature Accuracy : ±0.2°C
- Temperature Stability : <0.1°C per year
- Sensor Housing : Self-Adhesive Aluminium
- Power Supply : 12 to 24VDC
- IP Protection rating : IP67
- Output signal options : Analog 4-20mA and Digital RS-485 Modbus

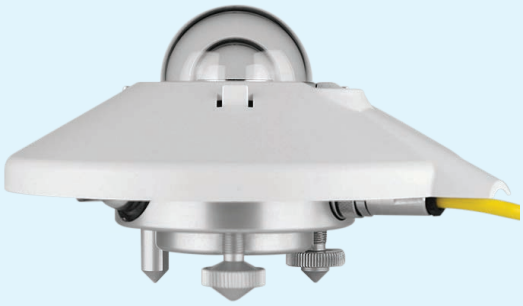
Make : **MBCS**
Model : **MBMet 802 and 803 Series**

PYRANOMETER

Secondary Standard SR20 Series

- Detector type : Thermopile
- Response time (95%) : 3s
- Calibration uncertainty : <1.2 %
- Zero offset a : 5 W/m^2 unventilated, 2.5 W/m^2 ventilated
- Zero offset b : <±2 W/m^2
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating : IP67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0 - 50mV and Digital RS-485 Modbus

Make : **Hukseflux**
Class : **Secondary Standard**
Model : **SR20 Series**



Make : **Kipp & Zonen**
Class : **Secondary Standard**
Models : **CMP10, CMP11, SMP10 and SMP11 Series**

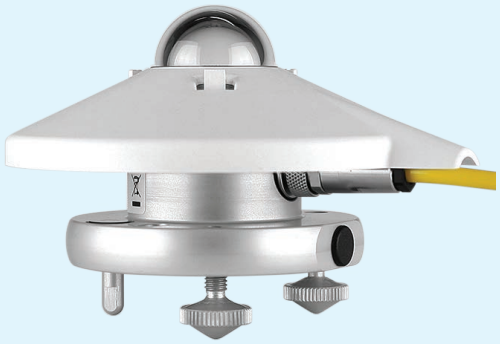
Secondary Standard CMP10, CMP11, SMP10 and SMP11 Series

- Detector type : Thermopile
- Response time (95%) : <5s (CMP10 and CMP11), <2s (SMP10 & SMP11)
- Calibration uncertainty : +/-2%
- Zero offset a : <7 W/m^2 unventilated
- Zero offset b : <2 W/m^2
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating : IP67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0 - 1V and Digital RS-485 Modbus (SMP10 and SMP11)
  Analog 0 - 20mV (CMP10 and CMP11)

Make : **Hukseflux**
Class : **Second Class**
Model : **SR05 Series**

Second Class SR05 Series

- Detector type : Thermopile
- Response time (95%) : 18s
- Calibration uncertainty : <1.8% (K=2)
- Zero offset a : <15 W/m^2 unventilated
- Zero offset b : <±4 W/m^2
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating: IP67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0 - 1V and Digital RS-485 Modbus



Make : **Kipp & Zonen**
Class : **Second Class**
Model : **CMP3 and SMP3 Series**

Second Class CMP3 and SMP3 Series

- Detector type : Thermopile
- Response time (95%) : <18s (CMP3), <12s (SMP3)
- Calibration uncertainty : +/-10%
- Zero offset a : <15 W/m^2 unventilated
- Zero offset b : <5W/m^2
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating : IP67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0 - 1V and Digital RS-485 Modbus (SMP3)

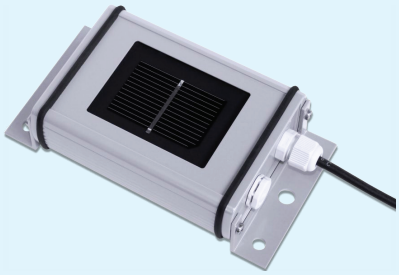
Make : **Kipp & Zonen**
Model : **RT1**

RT1 – Combined Irradiance and PV Panel Temperature Sensor

- Irradiance Measurement range : 0 to 2000 W/m^2
- Irradiance Precision/ Resolution : 1 W/m^2
- Irradiance Spectral Range : 400 to 1100 nm
- PV Panel Temperature Measurement Range : -20°C to +100°C
- PV Panel Temperature Measurement Accuracy : ±1°C
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- Output signal options : Digital RS-485 Modbus

Si Series

- Detector type : Silicon
- Response time (99%) : 0.15s (4-20mA Output), 1s (RS-485 Modbus Output)
- Calibration uncertainty : ±2.5%
- Offset : 2.2W/m ^{2} (4-20mA Output), 1W/m^2 (RS-485 Modbus Output)
- Measurement range : 0 to 1500 W/m^2
- Rated operating temperature range : -35°C to +80°C
- Supply voltage : 12 to 28 VDC
- IP Protection rating : IP65
- Output signal options : Analog 4-20mA and Digital RS-485 Modbus



Make : **Ingenieurburo M & T**
Model : **Si Series**

RAIN GAUGE SENSOR

MBMet-200

- Principle : Self-emptying bucket technology
- Accuracy : ±0.2 mm (typical)
- Stability : <0.1 mm per year
- Resolution : 0.2mm
- Measuring Range : 0°C to 60°C
- Operating Range : -40°C to 60°C
- Orifice area : Ø 200 cm^2
- Output signal option : Pulse Output

Make : **MBCS**
Model : **MBMet-200**

MBMet-200P

- Principle : Piezoelectricity
- Accuracy : ±5%
- Resolution : 0.1mm/hr
- Operating Range : -40°C to 70°C
- Output signal option : RS-485 Modbus

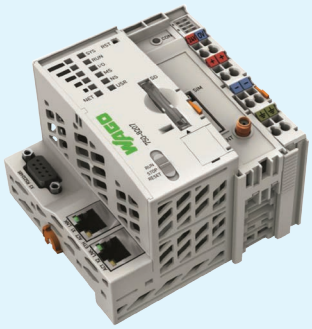
Make : **MBCS**
Model : **MBMet 200P Series**

MEASUREMENT DEVICE

MBLogger 1000 Series

- Micro-Processor : 32 bits ARM Processor
- Serial Interface : 1 RS-485 Port
  1 RS-485 and RS232 port (software configurable)
- Communication Protocols : MODBUS RTU Master or MODBUS RTU Slave, ASCII master
- Network Interface : Ethernet RJ-45 : 1
- Communication Protocols : Modbus TCP Master, Modbus TCP Slave, SNTP Client and FTP
- Analog inputs : 4-20mA (24 bits) : 4
  mV (0-10,000mV – differential – 24 bits) : 4
  mV (0-1,000mV – differential – 24 bits) : 4
  Battery voltage (24VDC) : 1
- Digital Inputs : 4 (Optically Isolated)
- Wireless communication : Built-in GSM/Cellular Modem (Optional)
- Display and keypad : OLED Colour Graphics with 4 buttons capacitive keypad (Optional)
- Memory : Upto 32GB (external SD card)
- Input voltage : 9-32VDC

Make : **MBCS**
Model : **MBLogger 1000 Series**



Make : **Wago**
Model : **750 Series**

Wago 750 Series

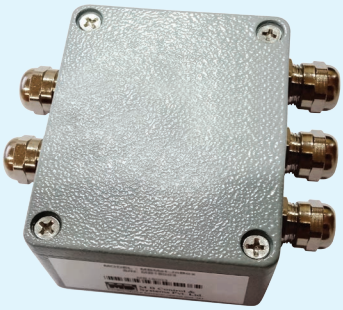
- Serial Interface : RS-232/RS-485 : 1 (Expandable)
- Communication Protocols : Modbus RTU
- Network Interface : Ethernet RJ-45: 2
- Communication Protocols : Modbus TCP, IEC 101, IEC 104, IEC 61850, FTP, NTP, SNMP
- Analog inputs : 2/4/8
- Digital Inputs : 2
- Wireless communication : Built-in GSM/Cellular Modem (Optional)
- Memory : 256MB (internal flash), 8GB (external SD card - further extendable to 32GB)
- Input voltage : 24VDC

ACCESSORIES - CABLE EXTENSION BOX

Make : **MBCS**
Model : **MB1280**

4 wire Cast Aluminum Junction Box

- Input : Four core cable
- Output : Four core cable
- Cable Size : Up-to 1.5 sq. mm.
- Surge protected metal cable glands
- Ingress Protection : IP66
- Dimensions : (L) 64mm × (W) 98mm × (H) 34mm
- Weight : 210 grams approx.



Make : **MBCS**
Model : **MB1356**

4-in RS-485 Cast Aluminum Junction Box

- Input : Four RS-485 cables (each having RS-485 communication and power supply)
- Output : Single RS-485 cable with power supply
- Maximum supply voltage : 24 VDC
- Power supply surge protection :
  a. 8.3ms, single half sine wave duty cycle = 4 pulses per Minute maximum.
  b. Peak pulse current waveform is 10/1000us, with maximum duty cycle of 0.01%.
- RS-485 Surge Protection : As per IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements
- Cable Size : Up-to 1.5 sq.mm.
- Surge protected metal cable glands
- Operating Temperature Range : -40°C to +90°C
- Operating Humidity : 0 - 95% non-condensing
- Ingress Protection : IP66
- Dimensions : (L) 98mm × (W) 64mm × (H) 36mm
- Weight : 230 grams approx.

Make : **MBCS**
Model : **MB1375**

0-20mV to 4-20mA Converter Aluminum Junction Box

- Power supply : Self-loop powered (12 to 24 VDC)
- Accuracy : 0.2% of FS @ 35°C ambient temperature
- Isolation : Input – Output
- Protection : Reverse voltage protection, 8KV Surge protection
- Input : 0-20 mV
- Output : 4-20 mA
- Operating Temperature Range : -10°C to +85°C
- Operating Humidity : 0 - 95% non-condensing
- Ingress Protection : IP66
- Dimensions : (L) 64mm × (W) 58mm × (H) 34mm
- Weight : 230 grams approx.

Radiation Shield

- Housing Material : Double louvred UV stable Polycarbonate Plastic plates with Stainless Steel screws
- Housing Plates : 10-Plates Radiation Shield
- Dimensions : Outer diameter : 123mm, Height : 208mm (without mounting bracket)
- Waterproof Glands : M32*1.5

Make : **MBCS**
Model : **MBMet-702**

MOUNTING TRIPOD, MAST AND ACCESSORIES

MB-P-3000 (Standard Model)

IIn the standard SURYA AWS package, we offer a 3-meter Galvanized Steel tripod. These tripods are rugged and the perfect solution for outdoor applications. However, as per client specifications, we also supply Stainless Steel Tripods and Masts. They have been designed in-house for easy setup at site.

Make : **MBCS**
Model : **MB-P-3000 (Standard Model)**

SOLAR POWER SUPPLY SYSTEM

MBMet-ENCSolarPS

Part of "SURYA" AWS offering, our solar power supply systems provide constant power supply to the datalogger and sensors or as a backup when the AC power fails. The system consists of a Solar Panel, Solar Charger, Battery, Cabinet and other mounting accessories.

Make : **MBCS**
Model : **MBMet-ENCSolarPS**

ENCLOSURES AND ACCESSORIES

MBMet-ENCP40×30×18 (Standard Model)

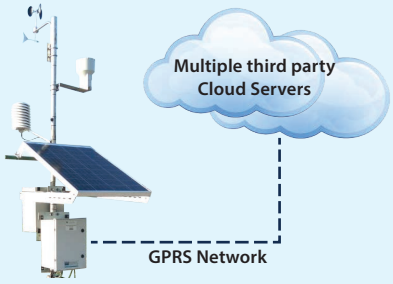
Standard enclosures are designed to house a data logger, power supply, surge protection devices etc. The enclosures' backplates enable easy mounting and rearranging of devices and other electrical hardware. These enclosures are designed to protect a data acquisition system's most sensitive components from elements such as dust, water, sunlight, or pollutants.

Under SURYA AWS, Standard IP65 Enclosure size we offer is (L) 400mm × (W) 300mm × (H) 180mm, Polycarbonate material including pole mounting accessories. However, as per client specifications and project requirement, we customize the Enclosure type/size.

Make : **MBCS**
Model : **MBMet-ENCP40×30×18 (Standard Model)**

REMOTE CELLUALR TELEMETRY SYSTEM

All our dataloggers come with an optional built-in cellular modem to transmit real-time sensor data to MBSCADA Cloud or any third-party servers. They are perfect for collecting weather sensor data in remote locations. Clients can add Solar Power Supply System for locations where no AC Power Supply is available to enjoy complete Automatic Weather Stations for remote locations.



REMOTE MONITORING SOFTWARE - MBSCADA CLOUD

MBSCADA Cloud is a web-based portal for accessing and monitoring WMS data throughfield datalogging devices. Users can generate reports, view trends and graphs and download reports in .xls and .pdf formats.

Benefits of MBSCADA Cloud :

- User friendly software
- Real-time data can be accessed from anywhere with internet access
- No local hardware server needs to be installed
- Live multiple-channel trend display
- Custom Alarms and reports
- Automated report generation on pre-configured email ids
- Multi-level account access
- Multiple Locations in a single account

THINGS TO CONSIDER WHEN PURCHASING A WEATHER STATION

How often is the data pushed?

Data packet from SURYA weather stations can be customized for seconds/minutes/hourly etc. as per the requirement and application of the customers. This allows flexibility to process the data packet as required for further analysis.

How do you access the data?

SURYA weather station lets you access, analyze and store the data on the datalogger, local computer and web portal.

- On the Datalogger, the customer gets to analyze more than just the current condition values. They get to analyze the highs and lows, averages for almost all measured weather parameters.
- On your computer, MBSCADA Cloud and any third-party web portal,

  SURYA weather station data can be accessed via local SCADA in Modbus Protocol via TCP/IP or in Modbus RTU. Data can also be downloaded locally on the computer via USB/SD card reader.

  With MBSCADA Cloud or any third-party web portal, data can be uploaded via ftp or MQTT protocol. This data can be accessed 24×7 as per your convenience from any part of the world.

How accurate is the data?

SURYA weather stations and MBMet weather sensors proudly beat their similarly priced competition in accuracy, reliability, resolution and range. All models are thoroughly tested in-house and through third party agencies and the reports are uploaded on the website with access to all.

How durable is the station?

With installations in harsh weather condition locations, MBCS SURYA weather stations have successfully endured such conditions. Data has been transmitted over years without disruptions allowing peace of mind to our customers.

How proactive is the after - sales service?

In India, our after sales and commissioning teams have been stationed in multiple locations to ensure timely servicing and support to our customers. Dedicated helpline number is provided for Indian and International customers for all technical and installation support.

How long has the company been in business?

M. B. Control & Systems Pvt. Ltd. – "MBCS" has been in existence since 1983. We are the leading manufacturer and solution provider in the Electrical Automation and Instrumentation sector. Our weather station and sensors are assembled and manufactured in Kolkata, West Bengal, India, where we have our R&D, manufacturing, testing and support team ensuring high quality design, product and customer support.

SURYA AWS | HIGH ACCURACY AND RELIABLE ALL-IN-ONE PROVIDER FOR METEROLOGY

MBCS WMS SURYA Range/04012020_V4.2

**Specifications are subject to change without notice.